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NOTES ON THE CAÑAFISTULA WEEVILS OF THE GENUS
PHELOMERUS PIC (COLEOPTERA: MYLABRIDAE).

BY WILLIAM DWIGHT PIERCE, Ph. D.

Among the interesting insects intercepted by the Federal Horticultural Board, E. R. Sasser found specimens of a "bruchid" weevil attacking the beans of the Cañafistula (*Cassia fistula*). As the species has not been studied morphologically, the following notes and descriptions will serve to identify the two species.

The interesting photographs of beans from "F. H. B. 23957" lot, illustrate an infested bean, one with adult emerging, one broken to show pupa, and another to show larva (Plate I).

Phelomerus Pic.

Phelomerus Pic, 1912, L'Echange Linneene, Vol 28, p. 92.

Type, hereby designated, *ochropygus* Pic.

Also included (*distinctus* Pic) = *aberrans* Sharp.

In addition to the two originally included species and the synonymy suggested above, Pic in 1913 added *Pachymerus lineola* Chevrolat (1871).

It is of great interest to note that the two original species breed in the seed pods of the huge podded Cassias, known as cañafistula, *Cassia fistula*, and *C. grandis*. This is quite in harmony with the author's findings of a correlation between habit and classification.

Pic's original description of the genus and also of the first two included species was very brief and inadequate. A translation follows:

Phelomerus, near *Pachymerus* Latreille. Form relatively elongate, posterior femora long, greatly surpassing the other femora, flattened and multidentate beneath. Head long, carinate; antennae with last joints very transverse. Genus established for the two following species from Colombia: *ochropygus* (Jekel), black, clad with a fulvous pubescence above and white beneath and on the pygidium, the latter bordered with black at base; front of head, greater part of antennae and four anterior legs more or less testaceous; prothorax unequal above, long, very constricted in front, with posterior angles very salient: and *distinctus* (Jekel), of a form a little less elongate and moderate size, with bands or spots of variable pubescence above, partly glabrous beneath

and on the posterior legs; pygidium black, in greater part glabrous, ornate with a pubescent white spot, more or less large, toward the apex, and maculate with yellowish brown at base.

Although these descriptions are very brief, I believe that the two species discussed below are properly identified:

***Phelomerus ochropygus* Pic.**

Phelomerus ochropygus Pic, 1912, L'Exchange Linneenne, Vol 28, p. 92.

Described below from two specimens bred from beans of cañafistula (*Cassia grandis*) (det. H. C. Skeels) from Panama and taken in quarantine at Washington, D. C., by E. R. Sasser, March 18, 1918, under F. H. B. No. 23957.

This large beautiful beetle (fig. 1) measures when fresh and fully extended, 9 mm. in length and 4 mm. in breadth. It can probably draw in its abdomen enough to reduce its length from one to two mm. It is in general brownish testaceous with conspicuous white pubescence on the venter and pygidium.

I shall proceed to a rather detailed description of this insect in order to introduce a more modern morphological description of a species of this family. In the past we have dealt

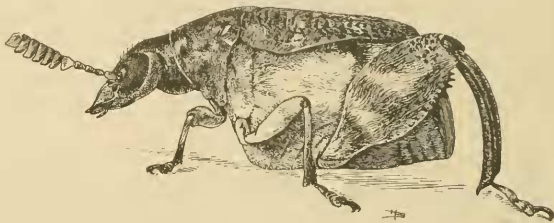
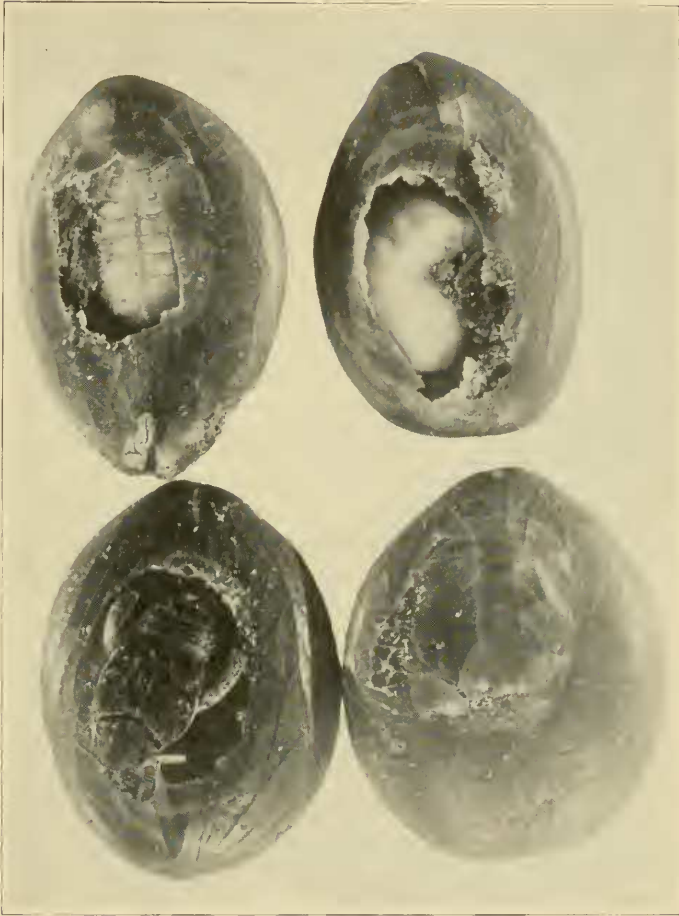


Figure 1. Adult *Phelomerus ochropygus* Pic, from side.
Drawn by H. S. Bradford.

with more or less vague terminology in Coleopterous descriptions, paying no respect to the value of morphological studies. Descriptions need not necessarily be long, but it is at least essential that one species in a genus be fully described.

The head is elongate, but hardly to be described as rhynchophorous. It is as long in front of the anterior margin of the eyes as behind it. The posterior portion of the head, or *collum*, which telescopes within the prothorax, is separated from the epicranium proper by a slight transverse constriction. This part is often called the neck. The dorsal portion of the collum, or occiput, is very minutely transversely rugulose and clothed with fine, golden brown pubescence. In front of the collum, between the eyes is the *epicranium*, medianly divided by the *epicranial suture*, in the form of a ridge. The epi-



EXPLANATION OF ILLUSTRATION.

Plate I. Photograph of four cañafistula beans, infested with *Phlomerus ochropygus* Pic, showing larva, pupa and adult (photo by E. A. Sasser).

cranium is separated behind from the pregena by a distinct suture from the base of the eye to the collum, and in front by a ridge over the antennal scrobes, from the dorsal edge of the emargination of the eye to the frontal suture, near the articulation of the mandible. The epicranium anteriorly is defined by the *frontal sutures* which branch forward from the epicranial suture. Along side of eyes the *vertex* portion of epicranium is very distinctly grooved. The surface of epicranium is finely punctate, densely pubescent with golden decumbent hairs, and with a row of sparse, long and close, short, erect superciliary hairs. The epicranium is laterally strongly emarginate by the inner lobes of the eyes.

The *eyes* are large, multiple-faceted, deeply emarginate, the inner lobe being narrower. The *frontal sutures* diverge from the epicranial suture, forming a very obtuse angle with the apex opposite the antennal fossae. They cut laterally the ridge from mandible to eye above the antennae, and terminate opposite the attachment of the mandibles. In front of these sutures is a large pentagonal piece, of which the black basal triangle is densely pubescent and the apical trapezoid very sparsely pubescent and reddish yellow in color. The lateral angles of the trapezoid are pedunculate. These two areas, triangle and trapezoid, represent the *frons*, and the *clypeus*; separated by the *epistoma*, which, however, is merely indicated by the change of vestiture. The epistoma probably meets the frontal sutures at the supra-antennal ridge, which is incidentally the suture between epicranium and *gena*. In front of clypeus is the black, broadly transverse, semilunar *labrum*, which bears a row of long discal hairs and also a fringe of apical pubescence. The *pregena* is well defined. Posteriorly it is separated from collum by the basal

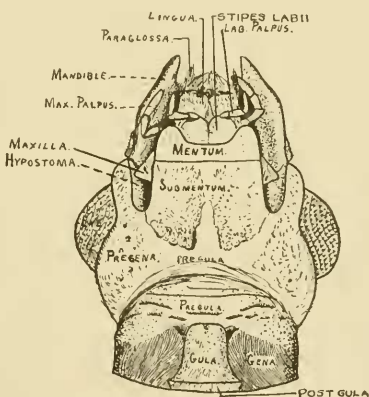


Figure 2. Venter of head of *P. ochropygus*. Drawn by W. D. Pierce.

constriction; dorsally it is bounded by a suture separating it from epicranium, and by the inferior lobe of the eye; anteriorly it invades the eyes, and is bounded by the supra-antennal ridge, the epistoma-frontal suture, and pleurostomal margin of the mandibles, and bears the antennae in front of the emargination

of the eyes. Ventrally (fig. 2), it is bounded by hypostoma and the basal lobe of the submentum; but is separated from pregena only by a change of vestiture. Throughout, the pregena is clad with long golden or white hairs, which become very sparse near the pregula, and very dense in the emargination of the eye. The pleurostomal margin of the pregena is emarginate.

The antennae are borne on a ball socket, with the first joint, or scape, slightly broader than the following, but little longer than broad, the funicular joints are three in number; the fifth joint is triangulately enlarged, the sixth to eleventh laterally produced, eleventh acute at outer apical angle, these seven joints constituting a broad, flattened club.

The *hypostoma* is a narrow glabrous piece, clearly separated from the pregena, but basally inseparable from the submentum, except by its absence of vestiture.

Hidden by the prothorax and only visible when the head is removed, we find the pregular area extending back of the constriction to the tongue-shaped *gula* and the genae at its sides. The base of the gula is the *postgula*. The gula forms the sternum, the genae the pleuri, and occiput the tergum of the collum.

The *pregula* is the ventral piece cut by the constriction of the collum. It is glabrous, but otherwise not separable from pregena or submentum. This glabrous pregular area is broad at base and projects forward between two pubescent lobes of the submentum with an acute apex, and two acute lateral processes into the area of the submentum.

The large quadrate *submentum* is, as just mentioned, divided basally into two lobes by the pregular area. The lateral processes of the pregula separate off a basal depressed, pubescent area on each lobe. The anterior portions are pubescent, merely adjoining the mentum. The *mentum* is a clearly defined subquadrate transverse piece, with broad, rounded lobes extending forward on each side of the labium. It bears a small clump of white hairs at each side. *Stipes labii* is broad, quadrate at base; the *palpi* three-jointed with basal joint small, second twice as long, enlarged at apex, third a little longer, the two latter black, the basal joint brownish; anterior lobes yellow, strongly fringed. The *maxillae* lie in a deep groove formed by the mandibles and hypostoma below, and the submentum, mentum and labium above. The palpi are four-jointed, the basal joint small and brown, the other three long and black. The mandibles are interesting in that their edges are shining glabrous, rounded, and the pleural face is depressed and densely pubescent; the apices are bluntly pointed.

The prothorax is about twice as wide at base as apex and with the posterior angles acute. The median dorsal line is depressed. There is a lobe on each side at base near the posterior angles. The base is broadly truncate lobate. The dorsal surface is densely clothed with golden brown decumbent pubescence. There are no distinct sclerites on the prothorax. The sternum is acutely angulately produced between the coxae, but does not completely separate them. The coxal cavities are open behind. Coxae elongate, contiguous at apex; trochanters minute; femora moderately slender, slightly enlarged beyond middle; tibiae slender; tarsi five-jointed with first longest,

second broader at apex, third broadly bilobed, fourth minute in base of emargination of third, fifth elongate, with claws appendiculate-toothed at base.

The vestiture of the prothorax beneath, and of the legs to the middle of tibiae is densely white, decumbent; the apical half of the tibiae beneath is clad with brown hairs, otherwise the tibiae and tarsi are clad with white; tarsal pods spongy beneath.

The scutellum is minute, medianly sulcate. The elytra are short, broadly, separately rounded at apex, emarginate by the prothoracic lobe; basal margin irregularly elevated; ten-striate; the first four striae strongly marked by elongate slash-like punctures, the others less distinct; lateral interspaces transversely slashed; vestiture dense, golden brown with lighter streaks.

The mesosternum and legs are densely white pubescent. The mesoepisternum only reaches the elytra externally. The mesosternum extends back, completely separating the coxae by about two-thirds their breadth. The coxae are more oval in shape, compressed, roundly grooved for the femora. Otherwise this pair of legs is like the preceding. A narrow transverse sternellum closes the coxae behind.

The metasternum is also completely clad with white beneath. The metepisternum is almost completely covered by the elytra. The epimeron is a broad quadrate piece. The metasternum is tumid in front, but not perpendicular. There is a median sternal suture, and at base there is an emargination caused by a small acute process of the abdominal intercoxal piece. There is a transverse trochantin in front of the transverse coxae, which are broadly separated by the broad intercoxal process of the abdomen.

The posterior legs have a transverse coxa, a small acute trochanter, a huge inflated femur; an arcuate, ribbed, acutely pointed tibiae, and normal tarsus. The femora are grooved beneath for reception of the tibiae and bear an external row of about eleven denticles, and an internal row of five or more slightly larger teeth guarding the groove. The hind femora are rather roughly granulate toward apex.

The abdomen is dorsally clothed with dark brownish pubescence, except that the apical half of the pygidium is densely clothed with white, which extends forward in three points. Each abdominal segment, except the last, consists of a tergal plate with the areas merely indicated by faint pubescences; a small tergal spiracle-bearing plate, with oval annular spiracles; a small epipleurum, a small hypopleurum, and the sternum divided transversely into basisternum and sternellum. The basisternal plates are glabrous; the sternellar plates are densely white pubescent, except at the sides of the second and third segments. The pubescence on the fifth ventral is more silvery, but there is a dense white patch toward the side. The pygidium in the male is clothed with white almost to the base. When the abdomen is contracted, the basisternal plates are concealed.

Larva.—This is illustrated by figures 3, 4 and 5. Frons bearing three pairs of setae, one pair discal, one pair lateral, and one pair latero-anterior. Antennae rudimentary two-jointed. Labrum broadly rounded. Mandibles obtuse, with a single seta. Maxillae with two-jointed rudimentary palpi. Labial palpi merely indicated.

The thoracic segments are made up as follows: three dorsal sclerites—

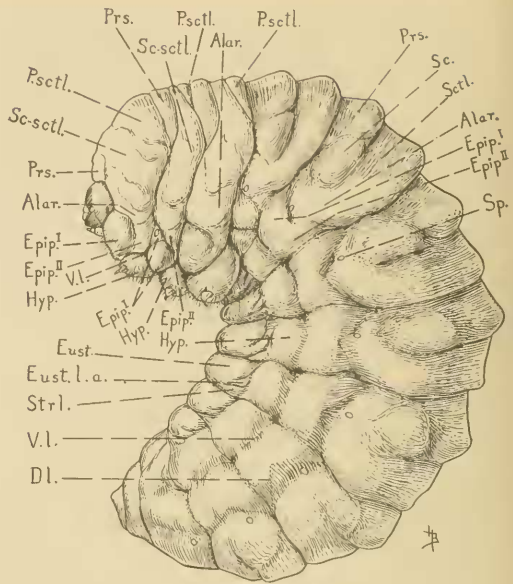


Figure 3. Larva of *P. ochropygus*.



Figure 5. Face of larva.

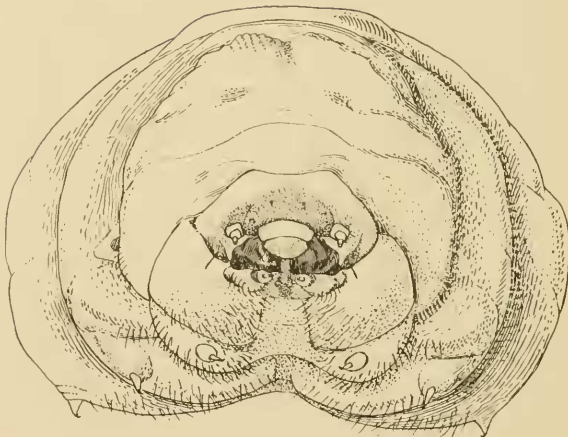


Figure 4. Front view of head and thorax of larva.

prescutum, scuto-scutellum and postscutellum, the first and last being spindle-shaped, while the scuto-scutellum extends from alar area to alar area. The alar area, fused with the second part of epipleurum is not strongly differentiated from the scuto-scutellum. The anterior part of epipleurum is a separate lobe and bears many small hairs. Below the ventro-lateral suture is the hypopleurum which is also setigerous and bears the tiny legs. The mesothoracic spiracle is annuliform and borne in a tiny area belonging to but above, the first part of epipleurum. The eusternum is a simple piece.

The first seven abdominal segments are as follows: Dorsally there are but two large pieces, the prescutum and scutellum. The scutum lies below the prescutum. The prescutum is divided by a median depression, thus forming with the scutum, four anterior prominences on each segment. The alar area lies below the scutum and is not strongly differentiated. It bears the annuliform spiracle. The dorso-lateral suture immediately below the alar area, is angulate on each segment, thus partially dividing the epipleurum into two parts, the anterior of which extends upward on the anterior margin, and the posterior of which extends upward on the posterior margin. Below the epipleurum is the ventro-lateral suture separating epipleurum from hypopleurum. The sternum is composed principally of the eusternum, with a small lateral arm of eusternum, and behind this at each side, the lateral arm of sternellum. The eighth segment contains only scutoscutellum with spiracle, epipleurum, hypopleurum and eusternum. The ninth and tenth segments are simple, the latter bearing the anus.

Pupa.—This is illustrated in figures 6 to 9. The figures illustrate the characters very distinctly, showing the kidney-shaped eyes, the epicranial and frontal sutures, frons, clypeus and labrum, mandibles, maxillae.

The abdominal regions are well shown in figure 8, which shows a transverse basal pretergite, the central prescutum, which by figure 7, we see is longitudinal divided. Behind this is the short transverse scutellum. At the sides of the prescutum are the scuti, and beyond these the alar regions. The dorso-lateral fold separates alar regions from epipleurum, the front portion of which bears the elliptical spiracle with linear valve. The ventro-lateral fold separates the epipleurum from hypopleurum. The sternum consists of three transverse sclerites, basisternum, eusternum and sternellum.

From a systematic standpoint the armature of the last segments is always very important in weevil pupae. In figures 6, 8 and 9 it is noticeable that the ninth pleural region bears an acute lobe or process directed laterally.

***Phelomerus aberrans* (Sharp) Junk.**

Bruchus aberrans Sharp, 1885, Biol. Centr.-Amer., Coleopt., Vol. 5, November, p. 448.

Phelomerus distinctus Pic, 1912, L'Echange Linneenne, Vol 28, p. 92.

Phelomerus aberrans and var. *distinctus* Pic, 1913, Junk's Coleop. Cat., part 55, p. 9.

The typical form *aberrans* was described from David, Bugaba and Taboga Island, Panama. The variety *distinctus* was described from Colombia and Brazil. Specimens of typical

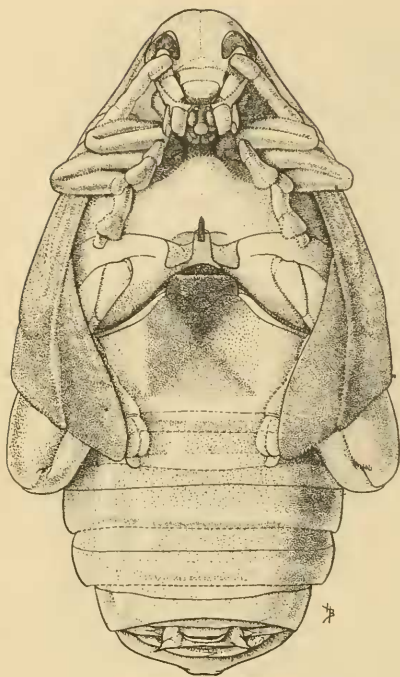


Figure 6. Venter of pupa.

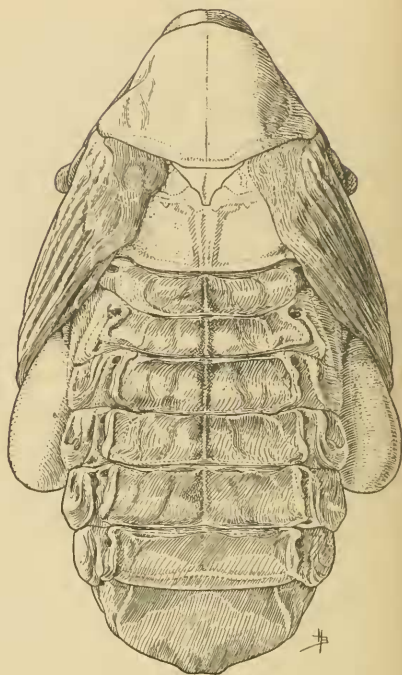


Figure 7. Dorsum of pupa.

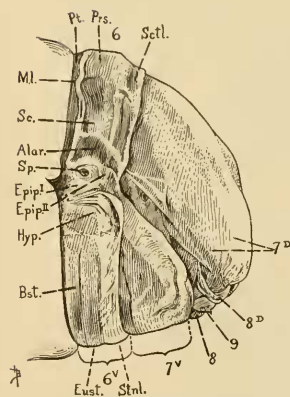


Figure 8. Side view of seventh to tenth pupal segments.

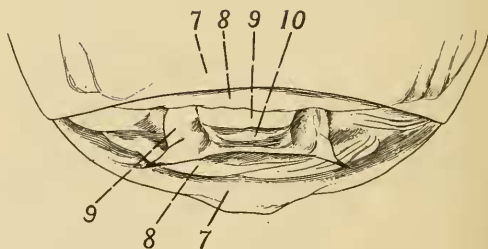


Figure 9. Posterior view of end of pupal abdomen.

aberrans are at hand from Belize, British Honduras, bred from Cassia beans, by C. F. Baker, under No. 5487. A large series was bred by E. A. Schwarz from pods of the cañafistula cimarrona, *Cassia grandis*, collected at Old Panama, Panama, in 1911, and at Paraiso, Canal Zone, March 15, 1911. Specimens were taken by August Busck on Tobaga Island, Panama, June 9, 1911, and at Tabernilla, Canal Zone, June 17, 1911.

This is also a very pretty species. Only those points will be mentioned below in which it differs from *ochropygus*.

The constriction at base of epicranium, forming the collum, is absent, being replaced merely by a change of sculpture above. Beneath, this constriction is deep. The occipital area of collum is coarsely punctate, minutely reticulate. The epicranial suture is strongly elevated, and at base medianly sulcate. The suture separating epicranium from pregena behind the eyes is raised. The surface of the epicranium is densely rugoso-punctate, rather sparsely clad with brownish hairs with denser golden pubescence in the basal corners and in front of the eyes, and also is provided with the superciliary hairs on vertex. The labrium is reddish. The head beneath is reddish. The pregena is densely clad with golden hairs in parts adjacent to the eyes, but toward the pregula it is very sparsely punctate and setose. The antennae are reddish brown, with the 6th to 10th joints darker. The pregular smooth area projecting into the submentum is very small and inconspicuous. The pubescence of the under parts of the head is golden. The collum is very much inflated, globose, beneath; the depression being a broad deep arc, while the mental zone of the head is flattened. Generally speaking the collum consists of four zones, the occipital or dorsal, separated laterally from the genal by a faint line; the genal or lateral; and the gular or ventral. On the collum the gula and gena are deeply separated by depressions. From the base passing forward, are the two deep lines of the gular sutures which curve away from each other and terminate on the disc. A little in front of these are deep diagonal lines which almost meet medianly and which reach the transverse impression behind the eyes. These separate the gena and the gula from pregena and pregula. The pregular area is divided in two by the collar constriction, the basal portion being strongly convex and the apical portion, which may be more or less hyposternal, is flattened. At the base of the gula is a small definitely defined transverse quadrate piece, the postgula of Hopkins, or intersternite of Crampton.

ABBREVIATIONS.

- Alar = alar region.
- Bst. = basisternite.
- D. = dorsum.
- Dl. = dorso-lateral suture, or fold.
- Epip. I = first epipleurite.
- Epip. = II second epipleurite.
- Eust. = Eusternite.

Eust. l. a. = ateral arm of eusternite.

Hyp. = hypopleurite.

Prs. = prescutum.

P. sctl. = postscutellum.

Pt. = pretergite.

Sc. = scutum.

Sc.-sctl. = scuto-scutellum.

Sctl. = scutellum.

Sp. = spiracle.

Stnl. = sternellum.

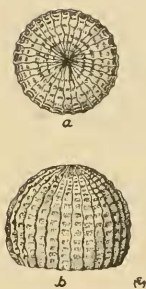
V. = venter.

V. l. = ventro-lateral suture, or fold.

THE EGG OF *LAPHYGMA EXIGUA* HÜBNER.

BY ROY E. CAMPBELL AND VICTOR DURAN,

Bureau of Entomology, United States Department of Agriculture.



The description and drawing of the egg of *Laphygma exigua* after Hoffman¹ quoted and illustrated in many old accounts of this insect, are incorrect, the upper cap, separated by a ring, being absent in all eggs examined by the writers. The eggs (Fig. 1) are typically noctuid, being spherical, but slightly flattened on top, with faint radiating longitudinal lines; iridescent pearly white or pinkish, 0.5 mm. in diameter. Before hatching they become darker and the head of the embryonic larva may be seen through the shell. The eggs are laid in clusters and are covered with hairs from the body of the moth.

Figure 1.—Egg of *Laphygma exigua*. *a*. Top view, *b*. side view (much enlarged).

A NEW SPECIES OF NOTARIS (COLEOPTERA: CURCULIONIDAE).

BY F. H. CHITTENDEN.

Notaris flavipilosus, new species.

Of similar form to *bimaculatus* Fab., elytra rather densely yellow-brown pubescent. Head distinctly, rather coarsely and densely punctate. Rostrum shining black, somewhat finely and sparsely punctate, more coarsely so at base

¹Die Ranfeu der schmetter Cinge Europas Eur. 50.68c.